THE SMARTSWITCH ROUTER 8000 FAMILY
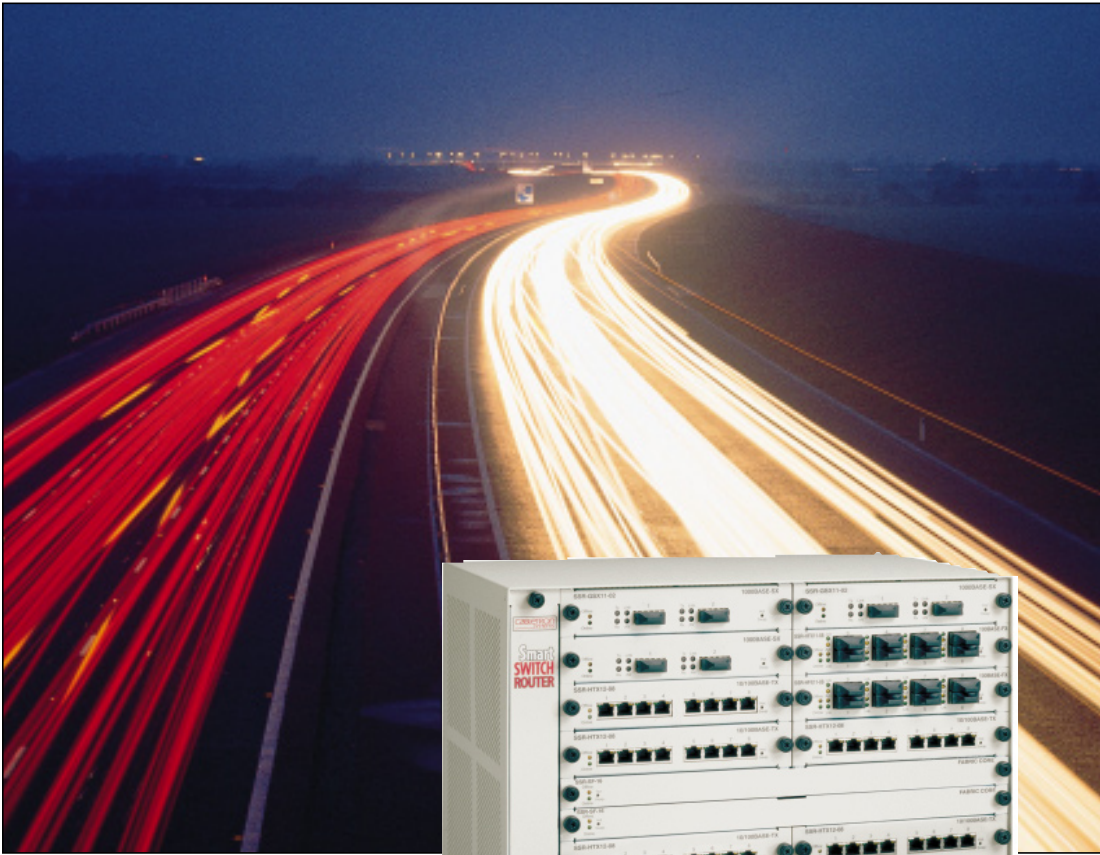
Backbone Switch Routers Featuring Gigabit Switching and Full-Function, Wire-Speed Routing
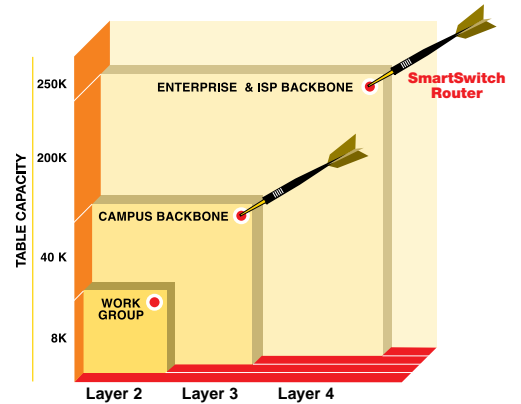

CABLETRON *SYSTEMS*

The Next Generation of Networking Technology

As businesses increasingly depend on their networks to gain a competitive edge, bandwidth-hungry applications, rich media types and server consolidation are combining to increase network congestion. Confronted with these issues, information systems (IS) managers are discovering that conventional software-based routers—although rich in features—lack the performance required by today's networks. At the other end of the spectrum, hardware-based Layer 2 switches are able to deliver high levels of performance—but lack the control and functionality of their router counterparts.

The solution to this dilemma lies in switching routers based on Gigabit Ethernet technology—a combination that offers the higher performance, greater control and enhanced capacity required to manage today's network infrastructures. These benefits are now available to IS professionals, with the introduction of the SmartSwitch Router from Cabletron Systems—the Smart Networking Choice.

## The SmartSwitch Router: The Layer 4 Gigabit Solution

The SmartSwitch Router extends Cabletron's SmartSwitch product family. Cabletron has provided smart networking solutions from the desktop to the data center, and now with the SmartSwitch Router, to the enterprise backbone and the WAN. Chassis-based SmartSwitch Routers combine wire-speed performance, pinpoint control and superior routing capacity to meet the needs of today's and tomorrow's networks. Equally important, the standards-based SmartSwith Router provides seamless interoperability with previous generations of networking equipment, protecting existing customer investments.

In addition to featuring Layer 2 switching and wire-speed full-function routing, the SmartSwitch Router's unique ability to switch Layer 4 application flows extends its functionality well beyond the boundaries of traditional routers. This advanced capability provides pinpoint control of network traffic through extensive security, port-level accounting and comprehensive Quality of Service (QoS)—all at the application level, and all without sacrificing wire-speed performance.

SmartSwitch Routers route packets at wire speed based on conventional source/destination data or on application-level information. This provides network managers with the performance they need, while extending their control to the application level. Now that's Smart Networking.
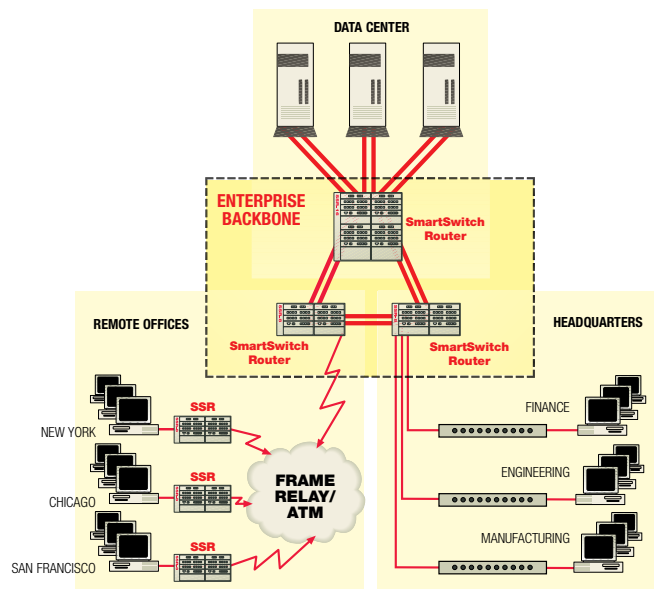
Wire-Speed Routing

SmartSwitch Routers minimize network congestion by routing up to 30 million packets per second (pps), orders of magnitude beyond the performance of conventional high-end routers. The SmartSwitch Router's non-blocking switching fabric delivers full-function unicast and multicast wire-speed IP/IPX routing at gigabit speeds.

The SmartSwitch Router's ASICs can switch or route traffic based on Layer 2, Layer 3 and Layer 4 information at wire-speed. These ASICs also store QoS policies and security filters, providing wire-speed performance even when QoS and security filters are enabled. As a result, network managers no longer need to make compromises when it comes to performance and functionality; the SmartSwitch Router delivers both.

Pinpoint Control

The SmartSwitch Router provides IS professionals with the pinpoint control traditionally lacking in switching devices. Features include application-level QoS and access control, wire-speed multicast capabilities, VLANs, extensive performance monitoring and Java-based management.

FUNCTIONALITY

Layer 4

Layer 3

Layer 2

· VLANS	· VLANS	· VLANS
· 802.1 p/Q	· 802.1 p/Q	· 802.1 p/Q
· RMON (4 Groups)	· RMON (4 Groups)	

Application Level:
· Wire-speed QoS
· Wire-speed Security
· Wire-speed RMON2

· **Wirespeed Multicast**

· IP/IPX Routing
· QoS

· **Full RMON**

· IP/IPX Routing
· QoS
· Multicast

Layer 2 Switches

Layer 3 Switches

SmartSwitch Router

PRODUCT CATEGORY

Application-Level QoS at Wire Speed

Based on Layer 2, Layer 3 and Layer 4 information, the SmartSwitch Router allows network managers to identify traffic and set QoS policies, without compromising wire-speed performance. The SmartSwitch Router can guarantee bandwidth on an application-by-application basis, thus accommodating high-priority traffic even during peak periods of usage. QoS policies can be broad enough to encompass all the applications in the network, or can relate specifically to a single host-to-host application flow. All QoS policies can be easily administered using Cabletron's CoreWatch network management tool.

Access Control at Wire Speed

Unlike conventional routers, the SmartSwitch Router's performance does not degrade when security filters are implemented. Wire-speed security, obtained through 20,000 filters, enables network managers to benefit from both performance and security. Filters can be set based on Layer 2, Layer 3 or Layer 4 information, enabling network managers to control access—based not only on IP addresses, but also on host-to-host application flows.
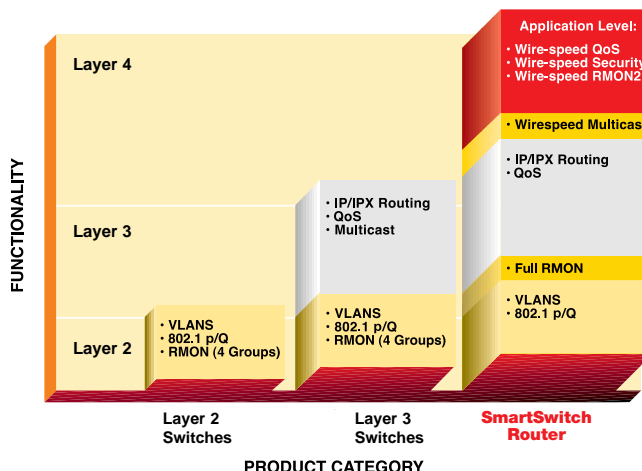
SSR 8600

SSR 8000

Wire-Speed Multicast

The SmartSwitch Router's switching fabric is capable of replicating packets in hardware, eliminating performance bottlenecks caused by conventional software-based routers. By providing the necessary infrastructure, the SmartSwitch Router turns the network into an efficient broadcast medium, supporting DVMRP, per-port IGMP, PIM-DM and PIM-SM.

SPECTRUM Management

The SmartSwitch Router is fully manageable using Cabletron's SPECTRUM network management software. Extensive configuration can be performed using the Enterprise Configuration Manager. In addition, comprehensive SmartSwitch Router troubleshooting and performance monitoring is also integrated in SPECTRUM. By using SPECTRUM, network managers can easily create networks that integrate the SmartSwitch Router with other Cabletron products including the SmartSwitch 6000 and 9000 platforms.

Easy-to-Use, Java-Based Management

The SmartSwitch Router's rich functionality is made easy to use through CoreWatch, a Java-based device management tool which provides extensive configuration and monitoring functionality. CoreWatch allows network managers to remotely monitor and troubleshoot a SmartSwitch Router from any Java-enabled client.

Industry-Leading Capacity

Large networks require large table capacities for storing routes, application flows, QoS rules, VLAN information and security filters. The SmartSwitch Router provides table capacities that are an order of magnitude greater than any other solutions available today, supporting 250,000 routes, up to 4,000,000 Layer 4 flows and up to 800,000 Layer 2 MAC addresses.

Full-function wire-speed IP/IPX routing enables the SmartSwitch Router to scale seamlessly as the network evolves. The SSR 8000 Family comes in two versions: an 8-slot and a 16-slot chassis. The 8-slot SSR 8000 chassis delivers a 16 Gbps switching fabric capable of more than 15 million pps. It can be configured with up to 56 10/100 ports or 14 Gigabit Ethernet ports.
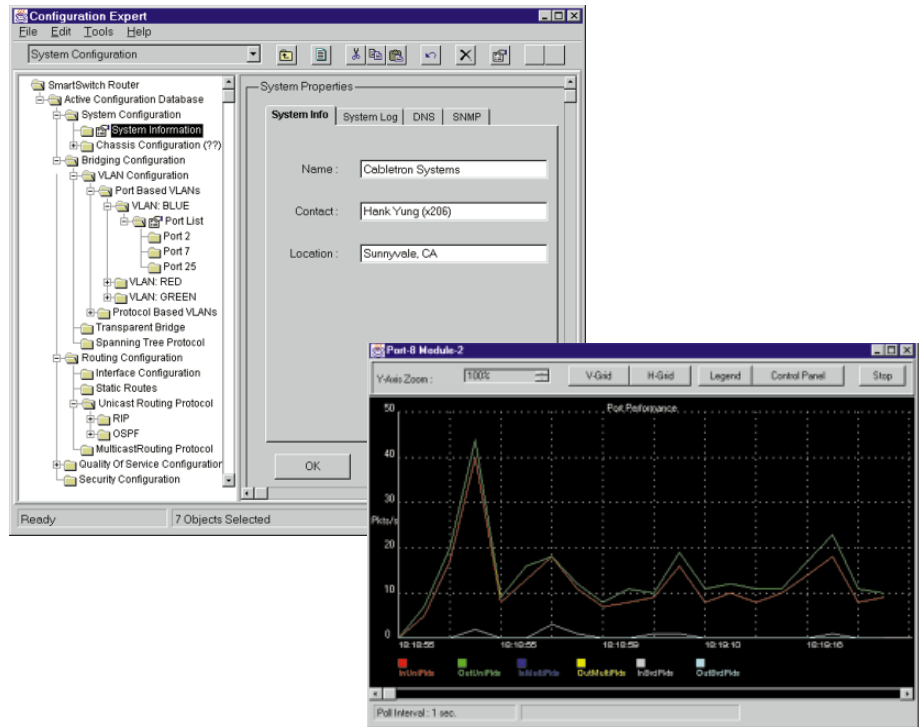
The 16-slot SSR 8600 chassis delivers 32 Gbps through a fully redundant switching fabric capable of more than 30 million pps. It supports up to 120 10/100 ports or 30 Gigabit Ethernet ports.

WAN Connectivity

The SSR 8000 Family supports WAN interfaces including a wire-speed quad port serial interface which delivers up to T1/E1 rates and a wire-speed dual port HSSI which deliver up to T3/E3/STS-1 rates. The WAN interfaces support extensive traffic shaping functionality, hardware-based compression and encryption, and support PPP and Frame Relay. In the future SmartSwitch Routers will support ATM and Packet over SONET.

Cable Modem Connectivity

The SSR 8000 Family also supports cable modem connectivity. With one (1) downstream and four (4) upstream interfaces in a DOCSIS-compliant module, the CMT interface transforms the SSR chassis into a completely integrated Cable Modem Termination System (CMTS). This highly scalable solution provides blazing performance, QoS, manageability and compatibility with residential cable modems in a one-box solution.

Reliability, Scalability and More

In addition to its superior performance, functionality and capacity, the SmartSwitch Router has been designed to provide the reliability and scalability that today's enterprise networks require. A redundant Control Module protects the backbone from catastrophic failures by automatically storing concurrent images of all configuration information, including VLANs, QoS policies and security filters. The SSR 8600 chassis also provides the option of a redundant switching fabric. All SmartSwitch Routers support redundant power supplies and hot-swappable interface modules, further increasing their reliability.

It all translates into four key benefits: Full function wire-speed routing at gigabit speeds. Pinpoint control over application usage. The capacity to handle even the most demanding enterprise network traffic. Simplified management. Isn't that what Smart Networking is all about?

For more information on Cabletron Systems and the SmartSwitch Router, call us today at 603-332-9400. Or check out our Web site at www.cabletron.com/smartswitch-router.

Layer 4 Switching

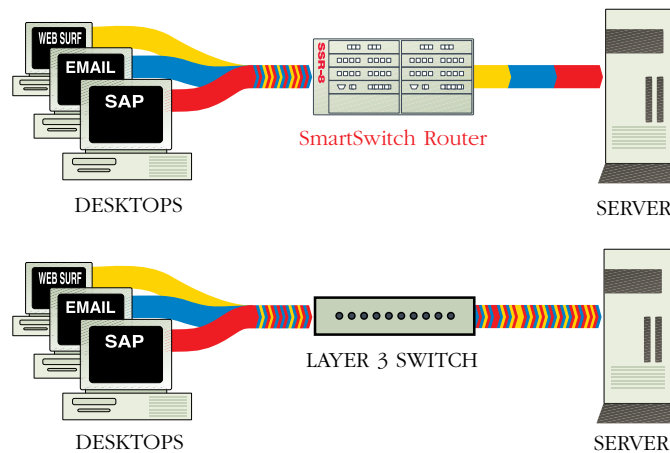## Taking Switching and Routing to the Next Level

Layer 4 switching is the ability to switch or route packets at wire speed, based on Layer 3 and Layer 4 information. This advanced capability removes bandwidth bottlenecks, improves network utilization and eliminates expensive troubleshooting processes, providing IS managers with complete and unprecedented control over wire-speed network traffic.

Layer 4 switching provides application-level control, which allows network administrators to apply security filters and QoS policies on specific application flows. These policies can relate to a single host-to-host application flow, or encompass all the applications in the network. For example, a network manager looking at Layer 3 flows can only control one computer talking to another, regardless of which applications are in use. Layer 4 switching, by comparison, enables administrators to assign e-mail applications a different priority than database applications. In this way, mission-critical applications can be guaranteed bandwidth throughout the network, ensuring predictable performance at all times.

Monitoring, policing, and accounting for traffic at the application level enables network managers to identify network "hot spots," balance application loads, and prioritize application access during times of congestion. Tracking usage by application, client/server and network segment enables proactive planning of bandwidth growth, and provides insight into the effects that new applications will have on the existing network infrastructure.

WEB SURF
EMAIL
SAP

SmartSwitch Router

DESKTOPS

SERVER

WEB SURF
EMAIL
SAP

LAYER 3 SWITCH

DESKTOPS

SERVER

672ns

Lookup and Packet Processing

SmartSwitch : *Layer 4 Functionality*
Router *at Wire Speed*

SMARTSWITCH ROUTERS

Functionality

Wire-speed Layer 4 switching
Wire-speed application-level QoS
Wire-speed security filters
Wire-speed full RMON/RMON2
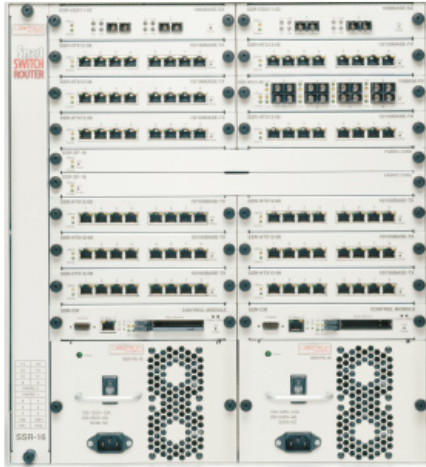Comprehensive Java-based management
Full redundancy

SSR 8000

Performance

16 Gbps non-blocking switching fabric
15 million pps throughput

Capacity

56 Ethernet/Fast Ethernet ports
    (10/100Base-TX or 100Base-FX)
14 Gigabit Ethernet ports
    (1000Base-LX or 1000Base-SX)
28 WAN ports (PPP or Frame Relay)
10,000 Cable Modem terminations

SSR 8600

Performance

32 Gbps non-blocking switching fabric
30 million pps throughput

Capacity

120 Ethernet/Fast Ethernet ports
    (10/100Base-TX or 100Base-FX)
30 Gigabit Ethernet ports
    (1000Base-LX or 1000Base-SX)
60 WAN ports (PPP or Frame Relay)
30,000 Cable Modem terminations

SmartSwitch Routers

Features

Wire-speed IP/IPX routing, unicast and multicast
Serial and HSSI WAN Interfaces: PPP, Frame Relay
Hardware-based WAN compression and encryption
Wire-speed Layer 4 application flow switching
Wire-speed application-level QoS
Wire-speed security filters
Wire-speed full RMON/RMON2
VLANs based on port or protocol
Redundant CPU, power supply and switching fabric
Hot-swappable media modules
CoreWatch Java-based management software
Familiar Command Line Interface (CLI)
SNMP manageable
Cable modem: Integrated Head-end solution

Capacity

250,000 routes
4,096 VLANs
20,000 security/access control filters
4MB buffering per Gigabit port
1MB buffering per 10/100 port

Standards and Protocals

IP Routing: RIPv1/v2, OSPF, BGP-4
IPX Routing: RIP, SAP
WAN: PPP, Frame Relay
Multicast Support: IGMP, DVMRP, PIM-DM, PIM-SM
QoS: Application level, RSVP
IEEE 802.1p
IEEE 802.1Q
IEEE 802.1d Spanning Tree
IEEE 802.3
IEEE 802.3u
IEEE 802.3x
IEEE 802.3z
Cable Modem: DOCSIS compliant

Environmental and Power Specifications

Operating Temperature: 0°C to 40°C
8-Slot Power: 120VAC, 3A Max.
16-Slot Power: 120VAC, 6A Max.

About Cabletron

Cabletron Systems is a leading developer of standards-based LAN, WAN and ATM networking solutions. Through its intelligent switching and enterprise management products, Cabletron provides the foundation for a "smarter network" that seamlessly ties together existing equipment with newer products and applications for a strategic enterprise that's more in line with the short- and long-term goals of an organization.

SSR 8000

Performance

16 Gbps non-blocking switching fabric
15 Million packets per second routing throughput

Capacity

56 Ethernet/Fast Ethernet ports
    (10/100Base-TX or 100Base-FX)
14 Gigabit Ethernet ports
    (1000Base-LX or 1000Base-SX)
2,000,000 Layer 4 application flows
400,000 Layer 2 MAC addresses

Physical Specifications

Dimensions: 8.75" x 17.25" x 12.25"
    (22.23 cm x 43.82 cm x 31.12 cm)
Weight: 44.5 lb. (20.2 kg)

SSR 8600

Performance

32 Gbps non-blocking switching fabric
30 Million packets per second routing throughput

Capacity

120 Ethernet/Fast Ethernet ports
    (10/100Base-TX or 100Base-FX)
30 Gigabit Ethernet ports
    (1000Base-LX or 1000Base-SX)
4,000,000 Layer 4 application flows
800,000 Layer 2 MAC addresses

Physical Specifications

Dimensions: 19.25" x 17.25" x 12.25"
    (48.9 cm x 43.82 cm x 31.12 cm)
Weight: 61.75 lb. (28.0 kg)

Product Ordering Information

PART NO.	DESCRIPTION
SSR-8	SSR 8000 8-Slot Chassis (backplane and fans)
SSR-16	SSR 8600 16-Slot Chassis (backplane, fans and one switch fabric)
SSR-PS-8	Power Supply for the 8000
SSR-PS-16	Power Supply for the 8600
SSR-CM2-64	Control Module (64 Mb of RAM)
SSR-CM2-128	Control Module (128 Mb of RAM)
SSR-SF	Switch Fabric

For complete ordering information, including specific modules, contact your Cabletron representative at 603-332-9400 or contact your local authorized reseller. You may also visit our Web site at www.cabletron.com/smartswitch-router

The Smart Networking Choice.™

CABLETRON SYSTEMS

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